THE AMERICAN MINERALOGIST

VOL. 4 JUNE, 1919 No. 6

TRIDYMITE CRYSTALS IN GLASS

N. L. BOWEN

Queen's University

In a recent paper, Le Chatelier[1] describes an example of devitrification of glass in which the formation of crystals of tridymite has occurred. The phenomenon took place under very unusual circumstances that were particularly favorable for the formation and growth of crystals. In a glass factory at Baccarat, France, work was interrupted on August 25, 1914, as a result of the occupation of the factory by German troops. The French workmen, with characteristic optimism, did not extinguish their fires but merely turned them low in the expectation of returning shortly. Twenty days elapsed before their hopes were realized and, in the meantime, the glass had been maintained at a temperature in the neighborhood of 800° C. The glass was found to contain crystals in radiating groups of thin plates, that were determined by Le Chatelier as tridymite.

Such exceptionally favorable conditions for the formation of crystals in glass are not likely to be duplicated. It is of interest to note, therefore, that in the mineral collection made by Professor William Nicol at Queen's University, there is a specimen of glass that shows exactly the same phenomenon. The crystals are in spherulite-like forms that are made up of thin plates in radiating groups very similar to those described by Le Chatelier but of smaller dimensions. The specimen had been cut into a conventional shape and polished and it was not desirable to break it, but with a file a small scratch was made on one edge where a group of crystals lay at the surface and the powder so obtained was examined in immersion liquids under the microscope. The crystals were thus found to have the optical properties of tridymite and the refractive index of the glass was found to be 1.56. This index corresponds with that of a light flint

[1] *Bull. soc. franc. min.*, **39**, 150, 1916.

made from the 1–2–3 batch, so called.[1] Thus, not only the crystals, but also the glass, proved to be identical with that described by Le Chatelier. The glass here described is said to have come from the Corning Glass Works, but I am unable to obtain particulars as to the conditions of its formation.

In discussing the significance of the finding of tridymite crystals in glass that had thus been held at an approximately constant temperature for twenty days, Le Chatelier points out that tridymite must be considered the stable form of SiO_2 for the temperature concerned, and rightly so. However, when he goes farther and concludes that tridymite is the stable form at all temperatures above the stability range of quartz, he ignores a great body of evidence that points to the stability of cristobalite at temperatures above 1470° C. Cristobalite cannot, of course, form as a stable phase in ordinary commercial glasses since, at 1470° C., they are all well above the temperature at which crystals of any kind can form in them. As a metastable phase cristobalite frequently appears in ordinary glasses at lower temperatures, but it will change to tridymite if the glass is maintained at these temperatures.[2] In special glasses from which the separation of silica can take place at temperatures above 1470° C., cristobalite is always formed at such temperatures.[3] It grows freely and persists indefinitely under these conditions. It may be repeated, then, that while Le Chatelier's example of devitrification proves the stability of tridymite at the temperature maintained in the glass furnace, no information whatever is given by it concerning other temperatures. The special glasses mentioned furnish information concerning the higher temperatures. They show that his extension of the stability range of tridymite to temperatures above 1470° C. is contrary to fact and that cristobalite is the stable phase at such temperatures.

[1] This designation refers to the proportions of the principal ingredients, one part K_2CO_3 or Na_2CO_3, two parts Pb_3O_4 and three parts sand.

[2] N. L. Bowen, The identification of stones in glass, *J. Am. Ceramic Soc.*, **1**, (9) 594–605, 1918.

[3] See any publication of the Geophysical Laboratory dealing with a system in which silica is one of the components.

PYRITE CRYSTALS FROM BALD MOUNTAIN, COLORADO

HERBERT P. WHITLOCK

American Museum of Natural History

The pyrite crystals which furnish the basis for this note occurred on a small hand specimen which was collected about 1910 from a prospect on Bald Mountain, Boulder County, Colorado, by Mr. R. W. Jones. They differ in habit from those described by Schaller,[1] altho somewhat resembling the crystals of Type I figured by Kraus and Scott.[2]

The eight crystals studied average about 2 mm. in diameter and are symmetrical in development, conforming closely to the habit shown in Fig. 1. Several rare forms were noted, including two new to the species. The forms comprise $a(100)$, $d(110)$, $o(111)$, $b(810)$, $O(730)$, $e(210)$, $i(430)$, $\zeta(650)$, $m(311)$, $q(211)$, $u(221)$, and the new diploids $S'(874)$, and $r'(10.5.4)$

The following measurements, made on a Fuess No. 2 goniometer, served to identify the forms:

TABLE 1. ANGLES OF PYRITE FROM BALD MT., COLO.

Letters	Symbols	Number of Measurements	Measured	Calculated
$a : b$	001 : 810	10	7° 11′	7° 7½′
$: O$	: 730	7	23 0½	23 11
$: e$	: 210	25	26 36	26 34
$: i$	: 430	16	36 57	36 52
$: s$	: 650	17	39 47	39 48
$: d$	: 110	13	45 1½	45 0
$e : r'$	102 : 5.4.10	10	19 41	19 40½
$: q$	: 112	35	24 14	24 5½
$: S'$	: 478	13	37 58	38 2
$: u'$	: 122	27	41 49½	41 48½
$a : m$	100 : 311	6	25 1	25 14½
$: q$	: 211	8	35 23	35 16
$: p$	: 111	10	54 45½	54 44
$: u$	: 221	8	70 40	70 31½
$: d$	: 110	5	89 57½	90 0

The forms grouped about the planes of the octahedron are in many instances reduced to very thin bevels and, altho yielding definite reflections of the goniometer signal, are only visible

[1] *U. S. Geol. Survey Bull.* **262**, 133, 1905.

[2] *Z. Kryst. Min.*, **44**, 151, 1907.

under a low power objective. Fig. 2 shows an enlarged projection of this portion of one of the crystals, with the position of the new forms (874) and (10.5.4) indicated.

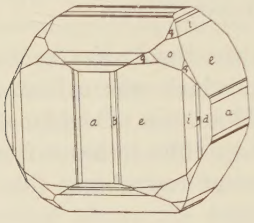

FIG. 1.

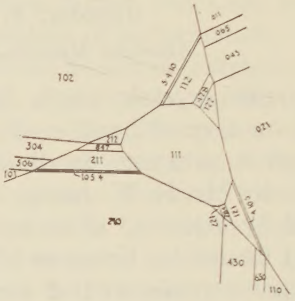

FIG. 2.

Pyrite, Bald Mountain, Colorado.

LIMONITE PSEUDOMORPHOUS AFTER PYRITE FROM YORK COUNTY, PA.

EDWIN F. HOLDEN

State College, Pa.

Cubical crystals of pyrite partly or wholly altered to limonite are to be found in many parts of York County. In fields and along roads between York and Wrightsville they are especially abundant, altho mostly of rather small size, under a centimeter in diameter. On Schump's Hill, south of York, they reach much greater sizes; the best locality is along a road running west from the York-Baltimore turnpike just south of the York Water Company's reservoir, about 2½ km. from the center of the city. They vary from 3 mm. to 10 cm. on a side, and even 15 cm. ones have been reported. The writer once saw one picked up which measured 12 by 8 by 5 centimeters This was somewhat distorted, but the moderate-sizes ones are often highly perfect, with smooth or faintly striated faces with equal sides. It is easy to obtain a series of evenly graduated specimens from 5 cm. down to a few mm. on a side.

The matrix from which these crystals weather is a slaty schist, interbedded in the Cambrian limestone. In fresh expo-

sures of this rock in quarries or cuts the pyrite is often preserved, but the loose crystals are usually solid limonite. Rarely they are found hollow, the pyrite nucleus having changed into some form more soluble than the surface portions. It is noteworthy that the cube seems to be the only form present on them, the writer having never seen any other form, altho hundreds of crystals have been examined.

FAMOUS MINERAL LOCALITIES: THE CHESTER EMERY MINE

EARL V. SHANNON

Washington, D. C.

Perhaps few localities in the United States are so often mentioned in mineralogic literature as the old emery mine at Chester, Mass., but like many other of the more famous New England localities, printed references to it are very old and vague and give the modern collector no idea as to just how to find the place whence the fine specimens of other years have come and leave him with the discouraging feeling that a visit to the locality at the present time would be a profitless waste of time and money. Within the past three years, one of the most prominent of American mineralogists was heard to say that he had visited Chester recently and that there was no longer anything to be found there. This remark caused the writer to avoid Chester for some time and almost to fail to visit the emery mine at all. The trip was finally made rather from a desire to see the locality than in any hope of obtaining specimens. This trip was however shortly followed by a second, and the fact that time for a third visit to this fascinating locality was not available has been a matter of keen regret.

Chester is best reached from Springfield, Massachusetts, by way of the Boston and Albany railroad, the trip requiring about an hour, and the fare, round trip, being less than two dollars.

The emery vein has been described frequently, particularly in the Monograph by Emerson[1] to which reference may be had for details of the geology. The emery lens extends in a north-south

[1] U. S. Geol. Survey, *Monograph* 29.

direction for several kilometers and much mining has been done. The most important portion of the vein was that opened by the "Old" mine, which is south of Walker Brook on the auto road to Jacob's Ladder in the Berkshires. It is just in the western edge of Chester village and but fifteen minutes walk from the railway station. The old mine has not been worked for a dozen or more years. Natives of Chester and vicinity claim that the emery is still available in untold quantity but that the mine was acquired by "the trust" and closed to remove its competition in the market with the inferior imported emery. A former superintendent of the mine told the writer that the available emery was largely worked out. This together with the increased use of artificial abrasives as alundum, carborundum, etc., probably accounts for the abandoning of the mine which, as Emerson remarks, was always more interesting scientifically than it was valuable economically. The mill has been torn down and only the tall stack remains. At the brook level there are still extensive dumps in spite of the fact that much rock has been hauled away for highway construction. These dumps have been thoroly picked over but still contain much fine radiated black tourmaline, some margarite, massive epidote, corundophilite, emery and much magnetite. The lowest adit, which is near the level of the brook immediately above the former site of the mill and beneath a trestle of the Chester granite quarries railroad, has caved at the portal so as to be inaccessible. Near the tunnel the writer found masses of bladed pale green epidote containing films of malachite and plates of menaccanite (ilmenite). Aragonite also occurs here in fine white rosettes on joints, and masses of black biotite resembling that of the Pelham asbestus mine, and granular bronzy black hornblende are abundant.

Higher up the south mountain are two other adits, both of which have large dumps and thus are much more prolific in fine minerals than are the dumps in the bottom. The writer did not learn of these upper dumps until his second visit. Probably more than half of the mineral collectors who visit Chester for a day do not find these, and this accounts for their superior richness in good material, they being less thoroly picked over. Margarite in beautiful micaceous masses showing broad folia of fine rose-pink color is perhaps the most striking mineral. Masses of glistening gray margarite-schist which look as tho they had been rolled up while in a plastic condition, when broken open often

have the center filled with the finest margarite associated with folia of deep green corundophilite or plates of the menaccanite. In one place the writer found a mass of aggregated margarite and black tourmaline which had, within a day or two, been broken up by some other collector. Some masses resembling fine-grained pink quartzite when analyzed proved to be massive margarite. Corundophilite is also common in scaly or schistose masses which often contain tourmaline or emery. Small plates of corundophilite also occur scattered thru greenish to reddish granular oligoclase, which is the indianite of Shepard. Magnetite is very abundant in large masses.

Emery is also common, altho even a very observant mineralogist may overlook it entirely. The writer was unfamiliar with the appearance of the abrasive and learned to distinguish it by trying the hardness of all heavy black minerals on a piece of glass carried for the purpose. Cracking up the tough masses of emery is strenuous work and requires a sturdy hammer but the industrious collector may be rewarded by some good crystals of corundophilite, diaspore, rutile or even the ethereal amesite—the last a prize indeed. The writer found one or more specimens of each of these. Menaccanite (ilmenite) is not rare and often wraps a nodule of biotite, in curved plates. Black tourmaline is very common and by using a little care in splitting off slabs parallel to the planes in which it occurs beautiful specimens may be obtained. Talc is common in broad slabs usually more or less rusty and rarely in good specimens. Epidote forms masses of interlaced needles and imperfectly columnar forms. Pyrite is common in large imperfect crystals. This completes the list of minerals found here by the writer.

The two upper tunnels and the tunnel of the Macia Mine which is immediately opposite, north of Walker Brook, are open but were not explored for want of a light. Great open stopes, which recall the metal mines of the west, break thru to the surface here and there along the course of the vein and the explorer needs be wary lest he fall thru some concealed opening to certain death many meters below. On the line of the emery lens south of the Old Mine a number of openings have been made, especially at the Wilbur Mine but these were not visited. The Macia Mine immediately north of Walker Brook in a little ravine has no very extensive dumps and a small amount of margarite was the only interesting mineral seen. Further north on the

high mountain known as North or Gobble Mountain are a number of openings but these were not searched out.

While at Chester the writer walked north some 5 kilometers along the Boston and Albany railroad, spending an hour carefully searching the railroad cut in the south end of the great Middlefield serpentine bed which has produced the serpentine pseudomorphs after olivine called hampshirite and, more recently, fine olivine crystals. No sign of these minerals was seen, and some picrolite and deep green serpentine were the only specimens obtained here.

The rock cutting on the railway a few meters north of Chester station is much blackened by years of coal smoke and cinders, as is common along this road. Some good small garnets of a deep red color occur here and a white sandy quartz bed furnishes abundant fine specimens of a fascicled black hornblende.

Most New England towns, and more particularly Chester, have for several generations past been the homes of ardent and enthusiastic local mineral collectors. These men, either from mutual rivalry or a desire for personal gain, have often jealously guarded the locality whence they obtained this or that mineral, and as a consequence many of these old localities are now entirely lost. From such lost localities Chester has furnished excellent specimens of epidote, cyanite, zeolites, calcite, zoisite, garnet, menaccanite, spodumene and many others. Fortunately collectors of the present day are more fraternal (if less numerous) and usually favor publishing details regarding finds which will enable others to follow them and find specimens of interest.

One native of the village of Chester informed the writer that three fourths of all known minerals were to be found within the limits of the township; this may have been the case in Shepard's day. But probably not more than a half dozen areas of similar size in the country outrank it in total number of species known at the present time.

Mineral collectors in this country often have a rather hazy idea as to the location and character of the localities in South America which have yielded so many fine specimens to collections, and it has heretofore been difficult to obtain definite information as to such localities, and even as to the correct spelling of their names. A recently published book, "Mineral Deposits of South America," by Benj. L. Miller and Joseph T. Singewald, Jr., will be found of interest in this connection, as it contains detailed descriptions of practically every important mineral occurrence on that continent.

THE THOMAS F. LAMB COLLECTION

EDWARD WIGGLESWORTH
Boston Society of Natural History

The mineral collection of the late Thomas F. Lamb of Portland, Maine, consisting of nearly 2,000 specimens, has been purchased by the Boston Society of Natural History. The greater part of the material is from New England localities and, therefore, the collection is of particular value to the Society which now specializes almost entirely on New England material.

During the forty-two years that Mr. Lamb collected minerals, he was also engaged in quarrying some of the well-known mineral localities of southern Maine which, in many cases, he was the first to work. The garnets from Phippsburg were first obtained by him and he continued to operate this locality for several years. With others he was one of the pioneers at Mt. Apatite in Auburn, where he actively operated for tourmalines. He was also interested in the Mt. Mica quarry in Paris.

The collection is, thus, rich in materials from these places and as Mr. Lamb never let a specimen go that was once included in his collection, some of the individual specimens are unusually fine. In addition to the tourmaline, beryl, purple apatite and smoky quartz from these quarries, are notable specimens of amethyst from Stowe, rose quartz with greasy luster from Mt. Mica, small gold nuggets from Byron, cassiterite crystals of exceptionally large size from Auburn and Paris, cancrinite with sodalite from Litchfield, and exceptionally fine topaz crystals from Baldface Mountain, Chatham, New Hampshire. Some of the rarities are bertrandite from Auburn, childrenite from Hebron and tapiolite from Topsham.

Some of the older readers of this magazine may recall seeing this collection on exhibition at the World's Fair at Chicago in 1893, and meeting Mr. Lamb, who accompanied it and who personally attended to its proper repacking and return. Thanks to his care it did not suffer by this trip.

Only a very few pieces will be put on exhibition at present, owing to limited space, but any mineralogist who is interested in the collection will be welcome to examine it at any time.

PROCEEDINGS OF SOCIETIES

THE NEW YORK MINERALOGICAL CLUB

At the meeting of January 15, postponed from January 8, 1919, the announced paper was presented by Prof. Benjamin K. Emerson on "The Use of Minerals as Characteristic Fossils in Determining the Age of Rocks."

Prof. Emerson described the distribution of certain minerals, especially chiastolite of various varieties of habit, thru the rocks of New England, each habit serving perhaps to characterize the rock in which it prevails.

Maps, black-board sketches and numerous apposite specimens were used to illustrate his highly interesting paper.

The February, 1919, meeting postponed from February 12, was held on the 19th inst. Owing to the absence of the announced speaker and also of the president, Mr. William T. Palmer was elected Chairman pro tem.

Mr. J. P. Wintringham showed an orthoclase or soda-microcline in contrast with labradorite, the latter with its well-known play of colors on a polished face cut in the direction of 010. The former shows a delicate blue or nearly white mother of pearl effect, when cut about at right angles to both the good cleavages 001 and 010, that is seen in very few collections.

The Secretary by request exhibited the "vise trimmer" and explained the "chisel holder," which were described in the February number of the AMERICAN MINERALOGIST.

The Chairman, Mr. Palmer, gave a very interesting account of a research in the qualitative analysis of minerals by photographing and measuring the characteristic bright line spectra of the elements, as produced in the electric arc, and comparing them with those shown under similar conditions by the minerals under examination.

MEETING OF MARCH 19, 1919. This meeting postponed from March 12 was held as usual at the American Museum of Natural History in New York, with the President, Dr. George F. Kunz, in the chair, and sixteen persons present, ten being members.

After a business meeting Mr. H. P. Whitlock presented for inspection a number of specimens of minerals recently acquired for the Museum collection comprising apophyllite and calcite crystals of exceptionally large size from Great Notch, N. J., gmelinite from Snake Hill, N. J., and garnet of special interest from New York.

The Secretary exhibited minasragrite from Minasragra, Peru, metahewettite from Utah and euxenite from Sao Paulo, Brazil.

Mr. Thomas I. Miller exhibited a specimen of cleavable quartz from Howard House, Del. Co., Pa.

The announced paper of the evening on the versatile uses of the petrographic microscope was then presented by Major Fred. E. Wright, of the Geophysical Laboratory, Washington, D. C. It was an illustrated review of his paper on

"The Petrographic Microscope in Analysis" published in the *Journal of the American Chemical Society*, Vol. 38, No. 9, Sept., 1916.

By reference to a high-grade instrument placed before the assembly its various parts were first explained and then by combination with suitable accessories, especially an arc light in a metal case, it was used as a projecting lantern by means of which beautiful projections of growing crystals were shown with polarized light upon the screen. These were chiefly organic subtances fused on slides under cover glasses, which re-crystallized as they cooled.

WALLACE GOOLD LEVISON, *Secretary.*

THE PHILADELPHIA MINERALOGICAL SOCIETY

Wagner Free Institute of Science, April 10, 1919

A stated meeting of The Philadelphia Mineralogical Society was held on the above date with the President, Dr. Leffmann, and later the Vice-president Mr. Trudell in the chair. Sixteen members and two visitors were present.

Dr. Herman Burgin addressed the society on "Some scraps of history and some experiences in connection with the mines on the Perkiomen and Pickering Creeks." The geology of the district was described, introductory to a general history of the Perkiomen, Ecton, and Wheatley group of mines, and the various ventures and attempts to operate them. Data was given of the extent of the old workings. Photographs of the old mines and works were exhibited, and a series of specimens from the Wheatley mine, collected during its operation. The communication was discussed by Messrs. Leffmann, Trudell, Koch and Gordon. Dr. Egee exhibited sphalerite from the Napoleon mine.

Mr. Trudell reported the results of the first 1919 society excursion to Mullica Hill, N. J., with Messrs. Knabe, Gordon, and Frankenfield. Vivianite and fine specimens of aragonite pseudomorphous after belemnites were obtained. Mr. Warford exhibited hematite from Edge Hill.

SAMUEL G. GORDON, *Secretary.*

NOTES AND NEWS

Sir William Crookes, the English chemist, died on April 4, 1919, in his eighty-seventh year. He was the author of a number of contributions to mineralogy; and it is particularly appropriate that the principal mineral of the element thallium, which was discovered by him, should bear the name crookesite in his honor. We hope to include a further account of his life and work in a future number.

Abstracts from back numbers of German and other foreign mineralogical journals which are now being received will be published as promptly as possible.

In a review of Wade's "Text Book of Precious Stones," published in our March number, mention was made of the method proposed for determining whether a stone was doubly refracting or not, by observing the transmission of sunlight. We have since been informed that this test was first worked out and used in teaching by Professor G. M. Butler, now dean and director of the University of Arizona College of Mines and Engineering, and Arizona Bureau of Mines, at that time professor in the Colorado School of Mines. No credit for this was given in the reviewed book, so we are glad to make this acknowledgment here.

NEW MINERALS

HOEGBOMITE

Axel Gavelin: Ueber Högbomit, ein neues gesteinbildendes Mineral aus dem Ruoutevare-Gebiet in Lappland. (On hoegbomite, a new rock-making mineral from the Ruoutevare region, Lapland.) *Bull. Geol. Inst. Univ. Upsala*, **15**, 289–316, 1916.

NAME: After Professor A. G. Högbom, on the occasion of his 60th birthday. [In transliterating Swedish or German names abstractor prefers to use "oe" instead of ö; thus goethite rather than göthite, hoegbomite rather than högbomite, etc.]

CRYSTALLOGRAPHIC PROPERTIES

System: trigonal rhombohedral; axial ratio $a : c = 1 : 1.56$; forms: base, c, and two rhombohedrons, $10\bar{1}1$ and $20\bar{2}1$.

PHYSICAL PROPERTIES

Color: black; luster: metallic adamantine; cleavage: not well marked, but apparently both basal and rhombohedral; fracture: conchoidal; brittle; weakly magnetic; H. = 6.5; sp. gr. = about 3.81.

OPTICAL PROPERTIES

In thin section brown with pleochroism ϵ bright yellow brown, ω dark but still yellowish brown; absorption $\omega > \epsilon$; class uniaxial; sign negative; refractive indices ω 1.853, ϵ 1.803, $\omega - \epsilon$ 0.050, all $\pm$ 0.003.

CHEMICAL PROPERTIES

Practically insoluble in acids, but on decomposition by fusion with sodium carbonate gave Dr. R. Mauzelius:

SiO_2 0.73, TiO_2 7.66, Al_2O_3 56.08, Fe_2O_3 20.91, Cr_2O_3 0.22, V_2O_3 trace, MnO 0.18, MgO 14.17, CaO, BeO, none, sum 99.95 per cent.

This corresponds, after deduction of ilmenite and spinel present as impurities, to the formula $RO.2R_2O_3$, with some TiO_2 replacing the R_2O_3, the mineral composition being (in isomorphous mixture): Al_2O_3 28.86, Fe_2O_3 17.41, $MgAl_2O_4$ 45.02, $MgTiO_3$ 8.06, $MgCr_2O_4$ 0.37, $MnTiO_3$ 0.30 per cent. It is thus evidently a member of the corundum-hematite group, with relationships to loangbanite and pleonaste.

OCCURRENCE

Occurs as a rock-making mineral in iron ores, associated with magnetite, ilmenite, pleonaste, corundum, etc. (Analyses and descriptions of these minerals and of several rocks are given in the paper.) E. T. W.

SOBRALITE

John Palmgren: Die Eulysite von Södermanland. (The eulysite [rock] from Södermanland.) *Bull. Geol. Inst. Univ. Upsala*, **14**, 109–228, 1917.

NAME: After Professor J. M. Sobral, who worked out its optical properties.

CRYSTALLOGRAPHIC PROPERTIES

System triclinic; a member of the triclinic pyroxene group.

Physical Properties

Color: brown; cleavage: parallel to two prisms and less distinct to a pinacoid in the same zone; in other respects typical of pyroxene group; sp. gr. 3.50.

Optical Properties

Class: biaxial; sign: positive; axial plane approximately normal to one cleavage direction; angles between axes of elasticity and crystallographic axes: $\mathbf{c} : c = 48.0°$ $\mathbf{b} : c = 55.1°$ and $\mathbf{a} : c = 62.2°$. In thin section colorless without noticeable pleochroism.

Chemical Properties

Analysis by Dr. Mauzelius: SiO_2 47.92, Al_2O_3 0.16, Fe_2O_3 0.46, FeO 13.78, MnO 27.96, MgO 3.58, CaO 6.20, H_2O 0.28, sum 100.34 per cent. The ratios of this are SiO_2: MnO : FeO : MgO : CaO = 8 : 4 : 2 : 1 : 1. It is related to iron-rhodonite and pyroxmangite, but is believed to be distinct from either.

Occurrence

As a constituent of eulysite rock at several places in Södermanland, Sweden. Associated with manganfayalite (see below), diopside, anthophyllite, hornblende, gruenerite, feldspars and garnets, analyses of which are given in the paper. E. T. W.

MANGANFAYALITE

John Palmgren, *paper above cited.*

This name is proposed for a variety of fayalite containing 5 to 30 per cent of MnO occurring in the eulysite rock referred to in preceding abstract. [In the opinion of the abstractor it is highly questionable whether a name should be given to such a variety; all the needs of the case would seem to be fulfilled by the use of the less objectionable term manganiferous fayalite.] E. T. W.

ABSTRACTS OF MINERALOGIC LITERATURE

PLATINUM. George F. Kunz. *Min. Ind.* **26**, 533–555, 1918. A summary of the platinum situation during the participation of the United States in the war, especially in 1917. Data are given as to the occurrence of platinum in the United States and other countries, and an account by Mr. F. W. Draper of his experiences in bringing a large quantity of the metal from Russia to this country quoted. E. T. W.

THE OCCURRENCE, CHEMISTRY, METALLURGY, AND USES OF TUNGSTEN. J. J. Runner and M. L. Hartman. *S. Dak. School Mines Bull.*, **12**, 264 pp., 1918.

Includes an elaborate summary of the mineralogy of tungsten with detailed descriptions of occurrences in the Black Hills of S. Dakota, which will be of interest to mineralogists visiting the region. There is also a complete bibliography of tungsten, including many mineralogical articles. E. T. W.

GEOLOGY AND ORE-DEPOSITS OF THE PLATORO-SUMMITVILLE MINING DISTRICT, COLORADO. HORACE B. PATTON. *Colorado Geol. Survey Bull.* **13**, 122 pp., 1917.

This geological report includes descriptions of the occurrence and origin of several minerals, especially of fine large crystals of covellite. E. T. W.

AXINITE VEINS IN THE PENMAENMAWR PORPHYRITE. H. C. SARGENT. *Geol. Mag.*, [6], **3**, 5–7, (1916).

The axinite is pale-brown or mauve, and occurs as thin sharp-edged crystals and radiating blades, associated with quartz, prehnite, a soda-lime feldspar, and a little epidote. S. G. G.

HAIDINGER'S RINGS IN MICA. T. K. Chinmayanandam. *Proc Royal Soc. A*, **95** (A 668) 176–189, 1919.

RADIOACTIVITY AND THE COLORATION OF MINERALS. E. NEWBURY and HARTLEY LUPTON. *Mem. Proc. Manchester Lit. Phil. Soc.*, **62**, [3], [10], 1–16, 1918.

See *Am. Min.*, **3**, 176, 1918.

NOTE ON THE AQUAMARINE MINES OF DASO ON THE BRALDU RIVER. SHIGAR VALLEY, BALTISTAN. C. S. MIDDLEMASS and L. J. PARSHAD. *Records Geol. Survey India*, **49**, (3), 161–172, 1918.

The geology and aquamarine deposits of a field discovered in 1912 are described. S. G. G.

AN UNUSUAL SULFUR CRYSTAL. F. RUSSELL BICHOWSKY. *J. Wash. Acad. Sci.* **9**, (5) 126–131, 1919.

A crystallographic description of an artificial sulfur crystal. A complete list of the forms reported for rhombic sulfur, and a stereographic projection. of them, are given. S. G. G.

THE CLASSIFICATION OF MIMETIC CRYSTALS. EDGAR T. WHERRY and ELLIOT Q. ADAMS. *J. Wash. Acad. Sci.*, **9**, (6), 153–157, 1919.

Thru peculiarity of habit, or angles approaching minerals of other classes, as in twinning, crystals may exhibit features of a higher or lower class of symmetry. Such mimetism has usually been noted by prefixing "pseudo" to the system or class. A new terminology of prefixes from Greek roots is suggested to indicate the underlying causes of the mimetism. S. G. G.

THE RICHARDTON METEORITE. TERENCE T. QUIRKE. *Science*, **49** (1256), 92–93, 1919.

Note of the phenomena attending the fall of a stone, on July 21, 1918, between Mott and Richardton, N. D. The stone is classified tentatively as a "veined kügelchen chondrite." About 100 Kg of material has been discovered, the largest being a fine boloid of 10 Kg. S. G. G.

THE PERCENTAGE NUMBER OF METEORITE FALLS AND FINDS CONSIDERED WITH REFERENCE TO THEIR VARYING BASICITY. GEORGE P. MERRILL. *Proc. Nat. Acad. Sci.*, **5**, (2), 37–39, 1919.

PLATE 8.

STALACTITIC BARITE FROM MADOC, ONTARIO